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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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EXAMINER

A, MINH D

ART UNIT

PAPER NUMBER

2821

DATE MAILED: 07/03/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/004,523

Applicant(s)

JANOS ET AL.

Examiner

Minh D A

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 01 November 2001.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-31 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-31 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 5.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claims 2-13, 15-24 and 26-31 are objected to because of the following informalities:

Regarding claims 2-13, 15-24 and 26, line 1, should "according to Claim" be changed to – according to claim --.

Regarding claims 27-31, lines 1, should "The process of Claim" be changed to – The process of claim--.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Regarding claim 30, the phrase "amtosphere" renders the claim indefinite because it is unclear whether the limitation(s) following the phrase are part of the claimed invention. See MPEP § 2173.05(d).

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

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4. Claims 1-3, 8-9, 14-16, 25 and 27 are rejected under 35 U.S.C. 102(b) as being unpatentable by Barnes et al (US 6,218,773).

Regarding claim 1, Barnes discloses the plasma source comprises the enclosure (210) having a gas inlet (218) and a plasma outlet (220) (corresponding to an open ended cylindrical body, wherein the body includes a gas inlet at one end, and an outlet at an other end) and at least one conductive fiber (the coil (202) having a first coil (204) and second coil (206) secured to the body. See figure 2, col.3, lines 38-65.

Regarding claims 2 and 16, Barnes discloses that the portion of the conductive fiber (202) is encased within a protective coating or dielectric material (See col.3, lines 66-67, the enclosure (210) having the tube and is made of a dielectric material).

Regarding claim 3, Barnes discloses the portion of the conductive fiber is in contact with the body. See figure 2, elements 202 and 210.

Regarding claims 8 and 9, Barnes discloses the enclosure (210) having a tube and is made of a dielectric material, such as quartz or sapphire (corresponding the cylindrical body comprises a material selected from the group consisting of sapphire, quartz, alumina coated quartz and combinations comprising at least one the materials). See col.3, lines 66-67 and col.4, lines 1-16.

Regarding claim 14, Barnes discloses that the plasma tube (210) having an open ended cylindrical body, wherein the body includes a gas inlet (218) at one end an outlet (220) opening at an other end, and an energy source (208) in operative communication with the plasma tube (210) and the at least one conductive fiber (204 and 206) secured to the body (210). See figure 2, col.3, lines 38-65 and col.5, lines 19-34.

Regarding claims 15 and 27, Banes discloses the energy source (208) is selected from the group consisting of microwave energy, radio frequency energy, and a combination comprising at least one of the foregoing energy sources. See figure 2.

Regarding claim 25, Banes discloses the process comprising: securing a conductive fiber (coil 202) to a surface of a plasma tube (210), herein the plasma tube (210) having a gas inlet (218) and a plasma outlet (220)(corresponding to an open ended cylindrical body, wherein the body includes a gas inlet at one end, and an outlet at an other end), and at least one conductive fiber (coils 204 and 206) in contact with the body (210); gas source for flowing a gas into the gas inlet (218) of the plasma tube (210); RF power source (208) for applying an electric field to the gas flowing in the plasma tube (210)to form a plasma and discharging the plasma from the outlet of the plasma tube (220). See figure 2, col.3, lines 38-65 and col.5, lines 19-34.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 4-5, 13, 17-18, 28 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al (US 6,239,553) in view of Morin (US 4,762,603).

Regarding claims 4, 17 and 28, Barnes does not disclose that the conductive fiber comprises a material selected from the group consisting of tantalum, tungsten, gold, copper, silver, molybdenum, aluminum, carbon, graphite, palladium, platinum,

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ceramics, and composites or compositions comprising at least one of the foregoing materials. However, Morin discloses the fibers can be formed from other semi-metallic fibers such as silicon, carbon fiber. See col.8, lines 12-19.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ the conductive fiber such as that suggested by Morin in the plasma tube of Banes to apply the electric field because the plasma can be initiated at higher pressures and can reduce the times for igniting the gas.

Regarding claims 5 and 18, Barnes does not disclose that the conductive fiber is a platinum coated silicon carbide fiber. However, Morin inherently discloses the conductive fiber is a platinum coated silicon carbide fiber. See col.2, lines 20-26.

Regarding claims 13 and 30, Barnes does not disclose that the at least one fiber has a thickness less than about 100 microns. However, Morin discloses the fiber has a thickness about 7 to 11 microns. See figure 2, col.5, lines 60-64.

7. Claims 6-7, 10-12, 19, 24 and 29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al (US 6,239,553).

Regarding claims 6 and 7, Barnes discloses the claimed invention except for the length of less than about 10 millimeters or the length of about 3 millimeters to about 5 millimeter. It would have been an obvious matter of design choice to the length of less than about 10 millimeters or the length of about 3 millimeters to about 5 millimeter, since applicant has not disclosed that the length of less than about 10 millimeters or the length of about 3 millimeters to about 5 millimeter solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with

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the length of less than about 10 millimeters or the length of about 3 millimeters to about 5 millimeter.

Regarding claim 10, Banes discloses the claimed invention except for the dielectric material is silicon dioxide. It would have been an obvious matter of design choice to the dielectric material is silicon dioxide, since applicant has not disclosed that the dielectric material is silicon dioxide solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the dielectric material is silicon dioxide.

Regarding claims 11 and 19, Banes discloses the claimed invention except for securing to an inner surface of the plasma tube. It would have been an obvious matter of design choice to securing to an inner surface of the plasma tube, since applicant has not disclosed that securing to an inner surface of the plasma tube the conductive fiber is secured to an inner surface of the plasma tube solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the conductive fiber is secured to an inner surface of the plasma tube.

Regarding claims 12 and 29, Banes discloses the claimed invention except for the conductive fiber is secured to the body at an angle substantially parallel to a length of the tube. It would have been an obvious matter of design choice to the conductive fiber is secured to the body at an angle substantially parallel to a length of the tube, since applicant has not disclosed that the conductive fiber is secured to the body at an angle substantially parallel to a length of the tube solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with

the conductive fiber is secured to the body at an angle substantially parallel to a length of the tube.

Regarding claim 24, Banes discloses the claimed invention except for the at least one fiber is at substantially parallel to the applied electric field. It would have been an obvious matter of design choice to the at least one fiber is at substantially parallel to the applied electric field, since applicant has not disclosed that the at least one fiber is at substantially parallel to the applied electric field solves any stated problem or is for any particular purpose and it appears that the invention would perform equally well with the at least one fiber is at substantially parallel to the applied electric field.

8. Claims 20-23 and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Barnes et al and Morin in view of Barry (US 6,35,070).

Regarding claims 20, 21 and 26, Barnes and Morin do not disclose the plasma tools comprising a light source, wherein radiation emitted from the light source is focused at a point within the plasma tube. However, Barry discloses the bulb contains a fill, which is excited by the microwave power to generate the plasma and curing radiation, such as ultraviolet radiation. See figures 1 and 4, col.2, lines 51-53.

It would have been an obvious to one of ordinary skill in the art at the time the invention was made to employ a light source such as that suggested by Barry in the system of tool plasma of Banes and Morin to generate the plasma and curing radiation, such as ultraviolet radiation because it is situated in the optical system that has desired effect of focusing the UV light in a manner that improves the efficiency of a process and allowed operation at much higher power densities.

Regarding claim 22, Banes does not disclose that the at least one fiber has a thickness less than about 100 microns. However, Morin discloses the fiber has a thickness about 7 to 11 microns. See figure 2, col.5, lines 60-64.

Regarding claim 23, Banes and Morin disclose the at least one fiber is at least partially aligned with the electric field. See figure 2, when Banes employs the fiber of Morin in the enclosure (210) and generate the electric field by RF power source (208).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Love. (US 6,084,348); Boyd et al.(US 5,639,565); Shang et al. (US 5,892,328); Ury et al. (US 5,847,517) are cited to show a Plasma process and apparatus.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Examiner Minh A whose telephone number is (703) 605-4247. The examiner can normally be reached on M-F (9:00 –6:00).

If attempts to reach the examiner by telephone is unsuccessful, the examiner's supervisor, Don Wong, can be reached on (703) 308-4856. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9318 for regular communications and (703) 872-9319 for final communications.

Any inquiry of a general nature or relating to the status of this application should be directed to the Technology Center receptionist whose telephone number is (703) 308-0956.

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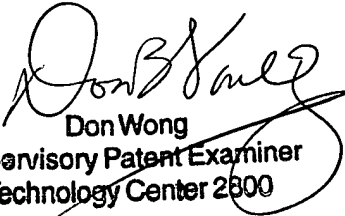
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Examiner

Minh A

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06/24/02


Don Wong
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